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Open Architecture Track Manager/ Joint Track Manager

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Overview

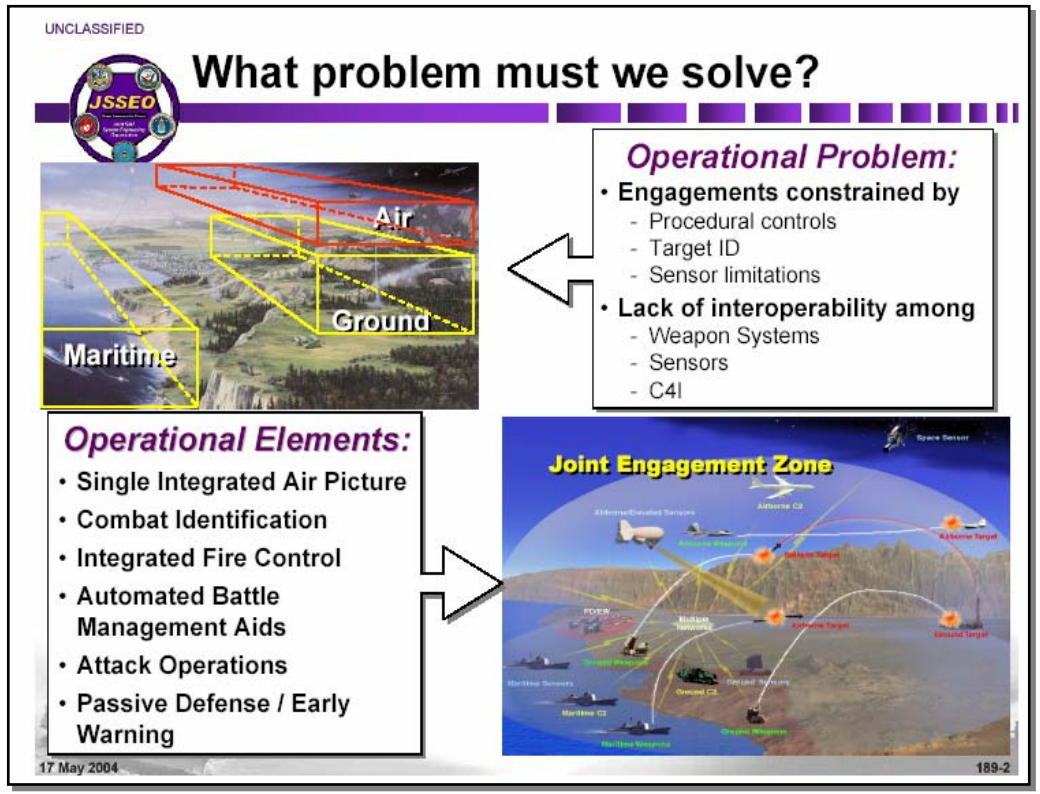
- Supporting a NIFC-CA Capability
- Joint Track Management Architecture
- Navy Open Architecture Track Manager
  - Architecture Overview
  - Ongoing collaboration with PEO C4I
    - Integration with COP and ISR
    - Relationship to CLIP & ADNS
  - Interconnectivity Plans
- Development Plan
  - Programmatics
  - OATM Design Considerations
  - OATM Roadmap
- Summary

Supporting a NIFC-CA Capability

- Attributes required:
  - An integrated track picture
  - High quality track data with low distribution latencies
  - Sensor-to-weapon threads (kill chains)
  - Multi-dimensional (not warfare domain specific)
  - Common communications links
- JTM/OATM brings…

Joint Track Management Architecture Objectives

- Services, MDA, and JSSEO are working to define a track management architecture that:
  - supports different approaches for processing sensor measurement, attribute and track related data to form and identify tracks
  - communicates data over diverse communications channels into different host systems to achieve a common tactical track picture
  - Provides a data exchange architecture to integrate the Common Tactical Picture (CTP) and the Common Operational Picture (COP)



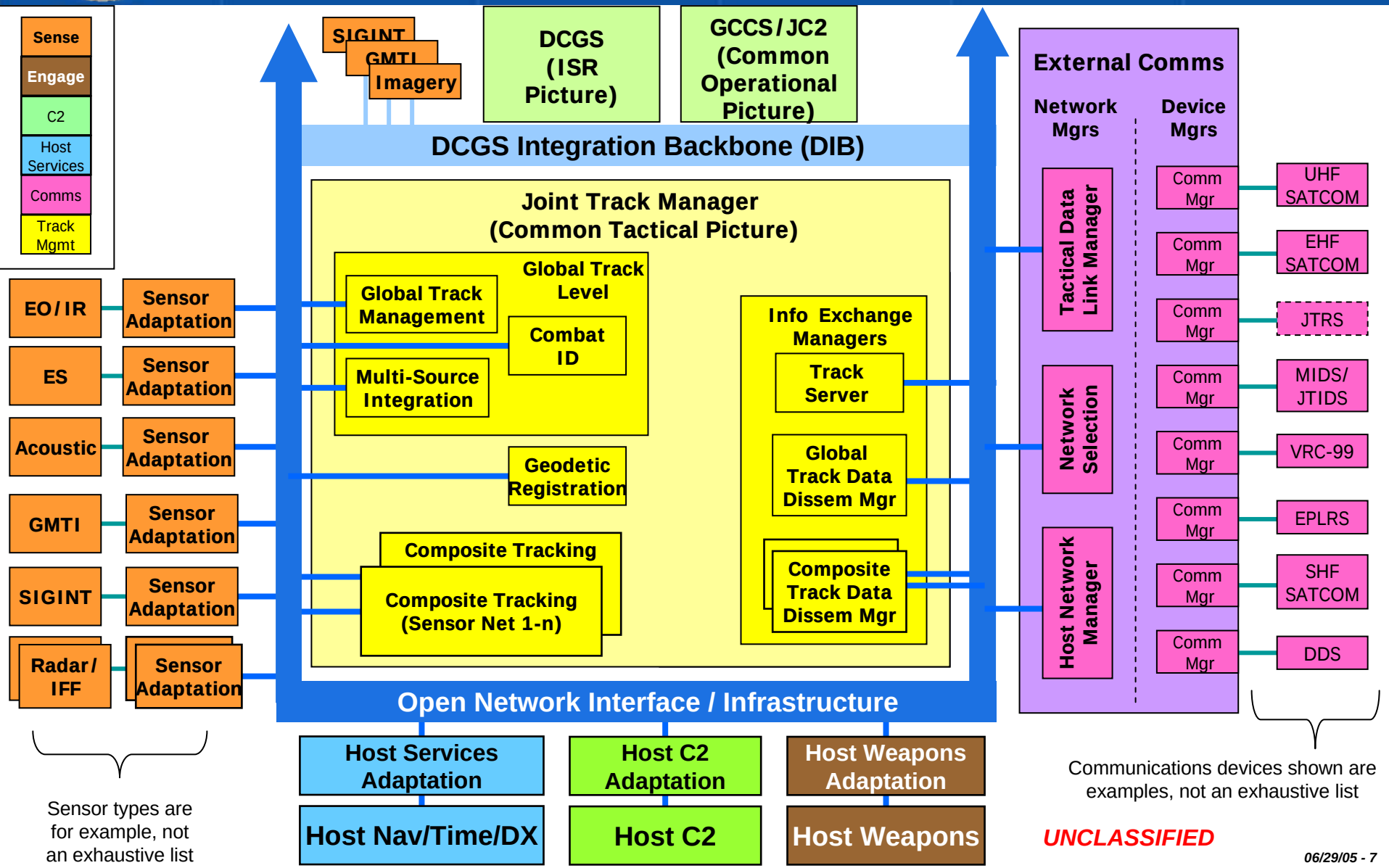
Joint Architecture Objectives

- Achieving common tactical picture involves more than just a common way of doing track management – it must also:
  - Fit within a common external communications service standard (e.g., QoS level, priority, routing, destinations)
  - Be adaptable to different levels of QoS
  - Accommodate different system architectures, not be a “black box”
- Must be able to use today’s comms devices and C2 systems as well as evolve to future net-centric C2 systems and comms capabilities
- Meet host system performance while achieving interoperability KPPs
- Focus should be on consistency of data definitions (object model), standardization of information exchange requirements, and data conflict resolution mechanisms

Architecture Precepts

- Well-layered design that separates:
  - User presentation from business (application) processes,
  - Common application processes from element-specific processes,
  - Application processes from supporting data and services
  - Supporting services from technology-dependent functions
- Compliant with well-supported industry standards for technology-based layers e.g. computing equipment, operating systems, middleware
- Component-based architecture with
  - Openly published interfaces, standardized across enterprise
  - Decentralized
  - Loosely coupled and composable
  - That operate asynchronously, including startup/shutdown/recovery

Proposed Joint Track Management Architecture & Interface Standards



Sensor types are for example, not an exhaustive list

Communications devices shown are examples, not an exhaustive list

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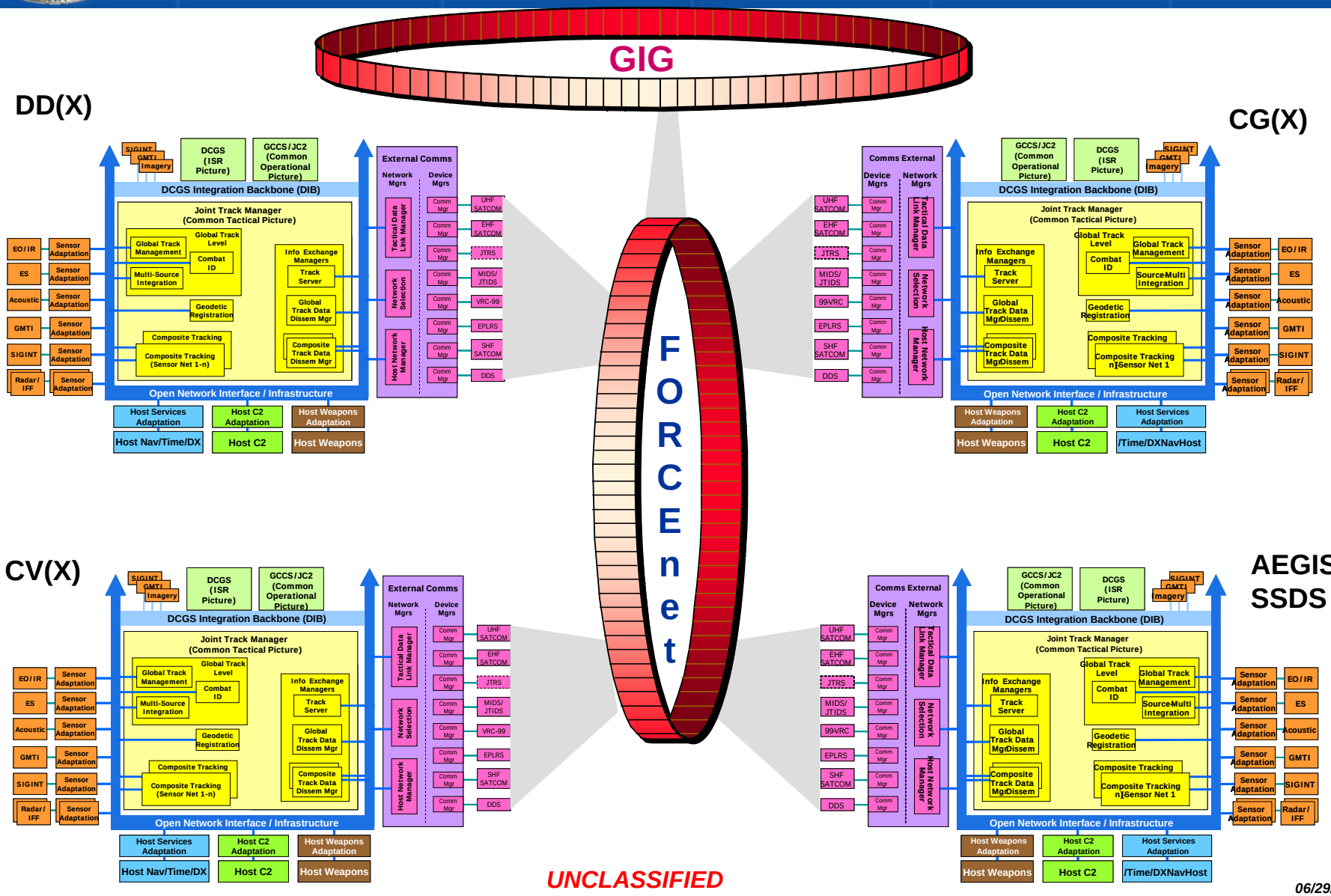
Future Battlegroup Information Exchange



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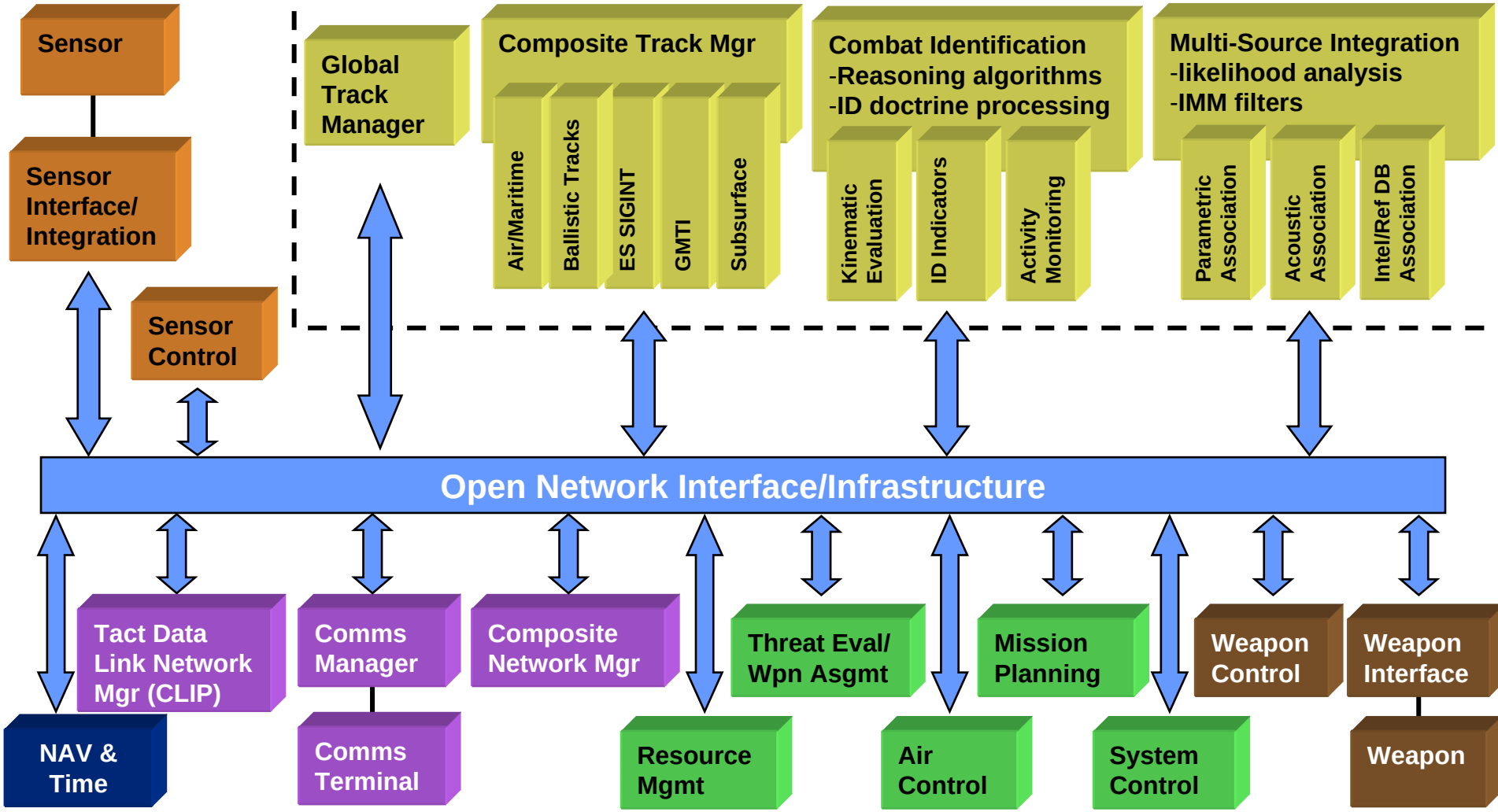
OATM Components Interact With Other Host Elements Via Common Middleware



CEP-DDS Decoupling Goals

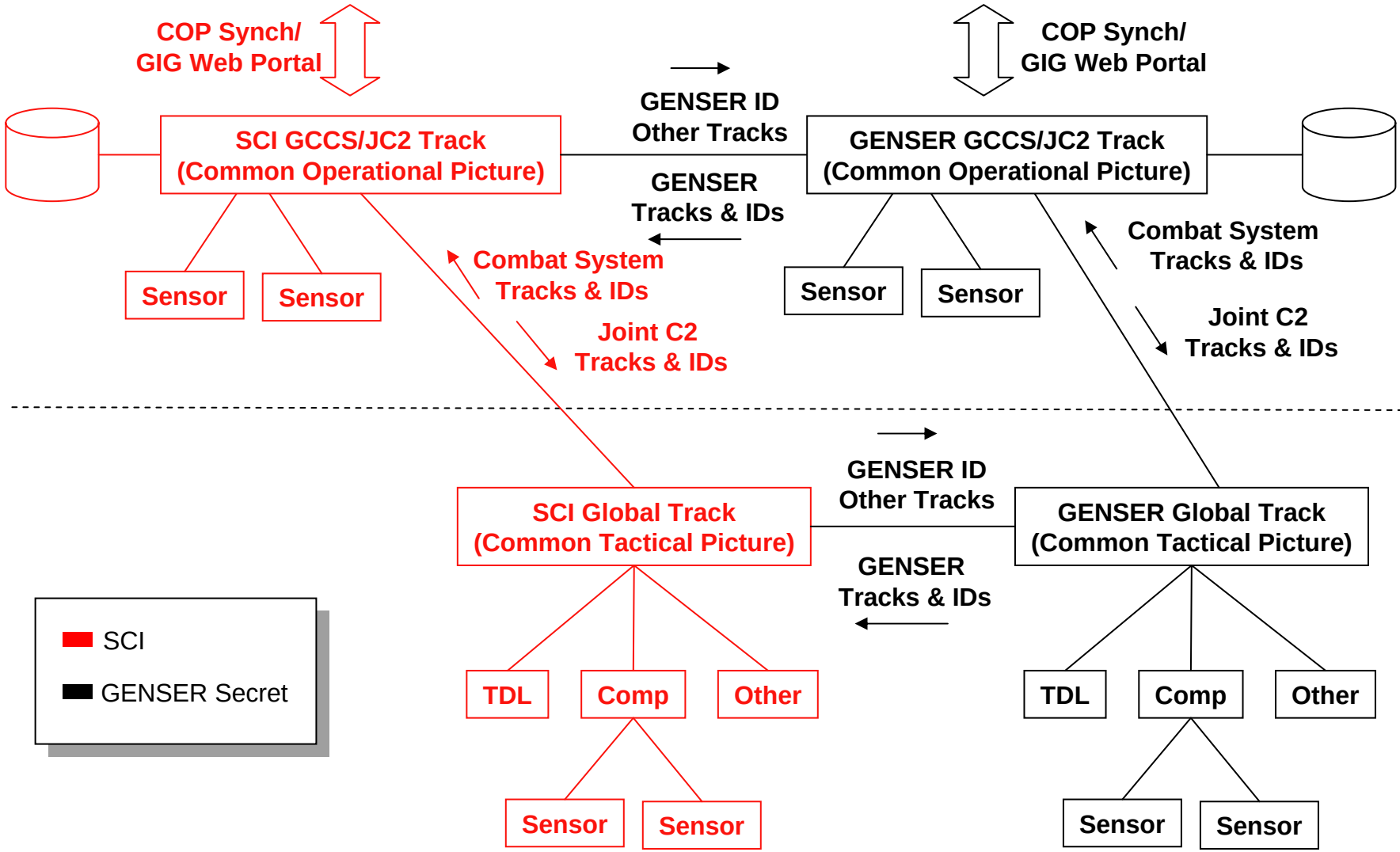
- Show a clear path toward an architecture and design that will maintain desired CEC capability. In the near-term, breakup priorities are:

1. Decouple Cooperative Engagement Processor (CEP) communications from the dedicated Data Distribution System (DDS) system, and allow it to use other available communications channels
2. Separate CEP-DDS communications management to allow it to become a module in a host-based integrated communications manager
3. Decouple DDS such that it is available to provide IP-based communications services to applications other than CEP
4. DDS will be converted to a Software Communications Architecture (SCA) in accordance with ASDII/JTRS/SCA guidance

Ongoing PEO IWS Collaboration With PEO C4I

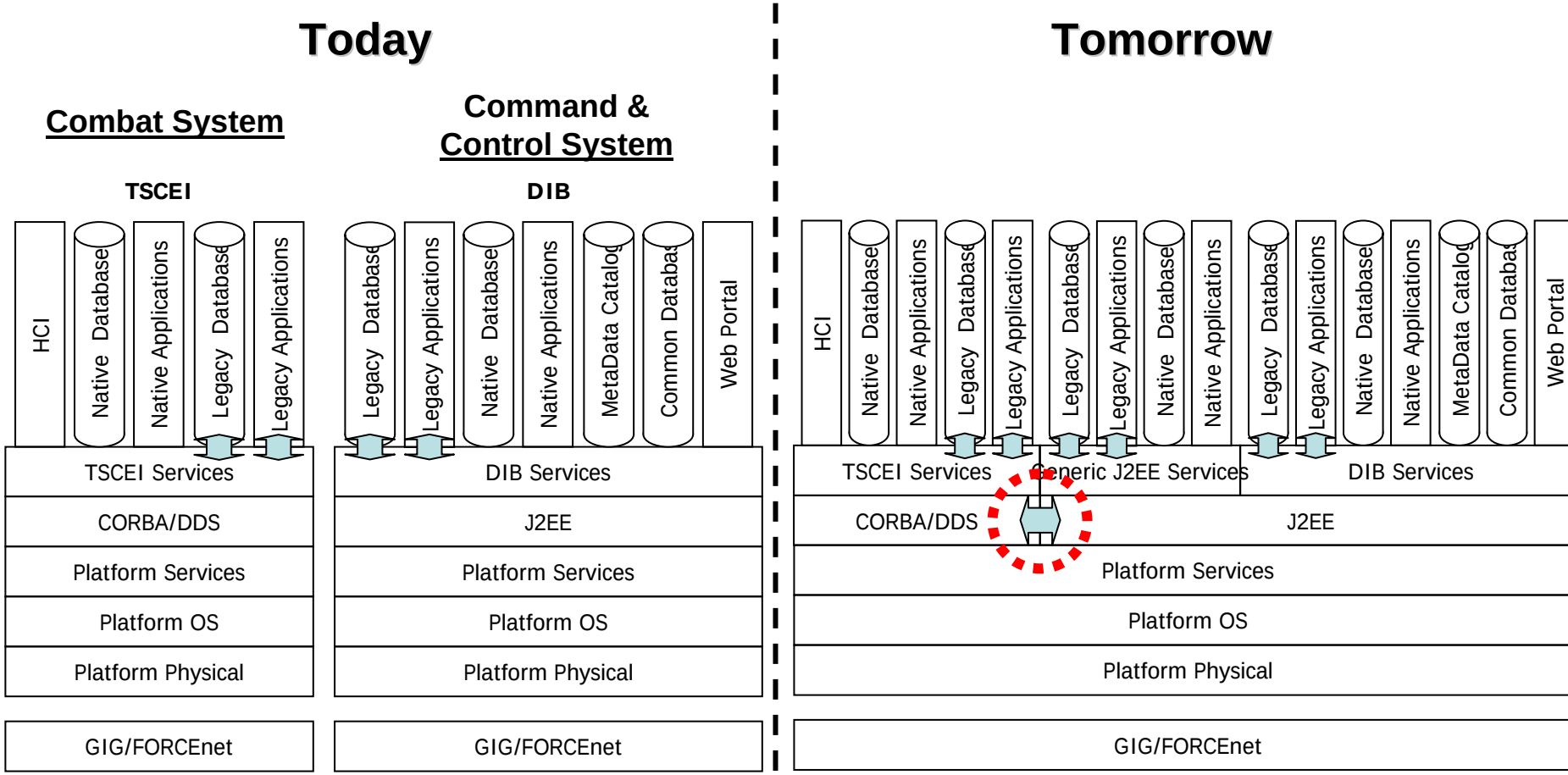
- To define the:
  - Common Tactical Picture (CTP) relationship to the Common Operational Picture (COP) & Global Information Grid (GIG)
  - Common Link Integration Processing (CLIP) relationship to the JTM/OATM
  - Automated Digital Network System (ADNS) relationship to the JTM/OATM

Relationship of CTP to COP and GIG

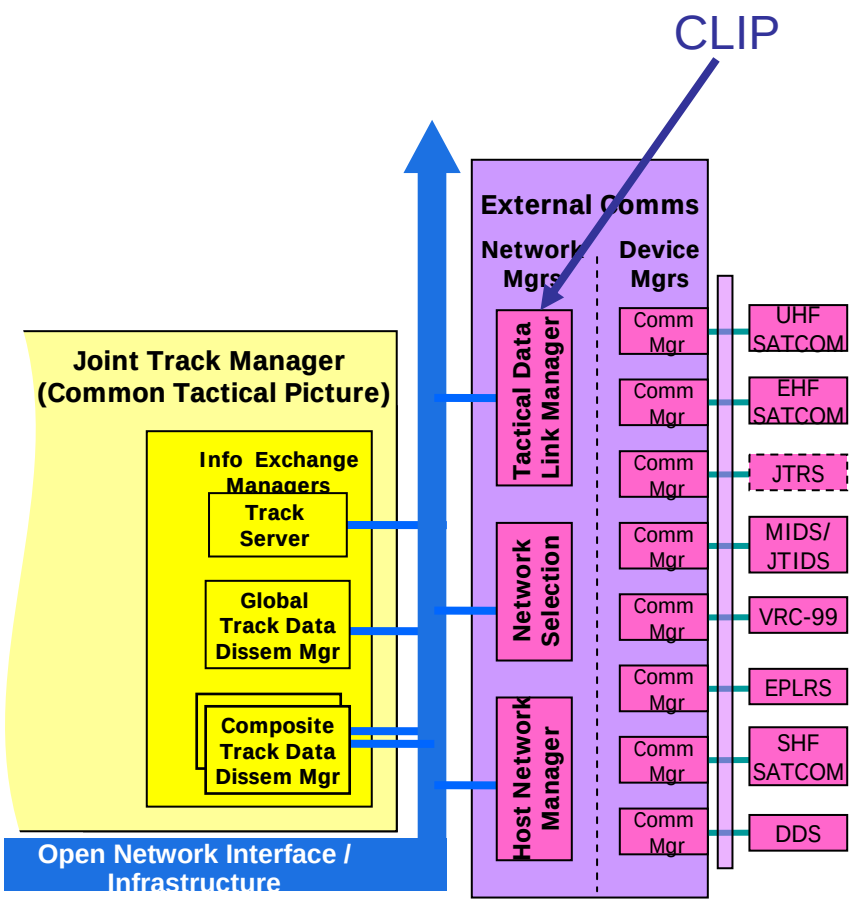


Building the Bridge

TSCEI DIB Integration merges the two infrastructures into a common application platform



CLIP Relationship to JTM/OATM

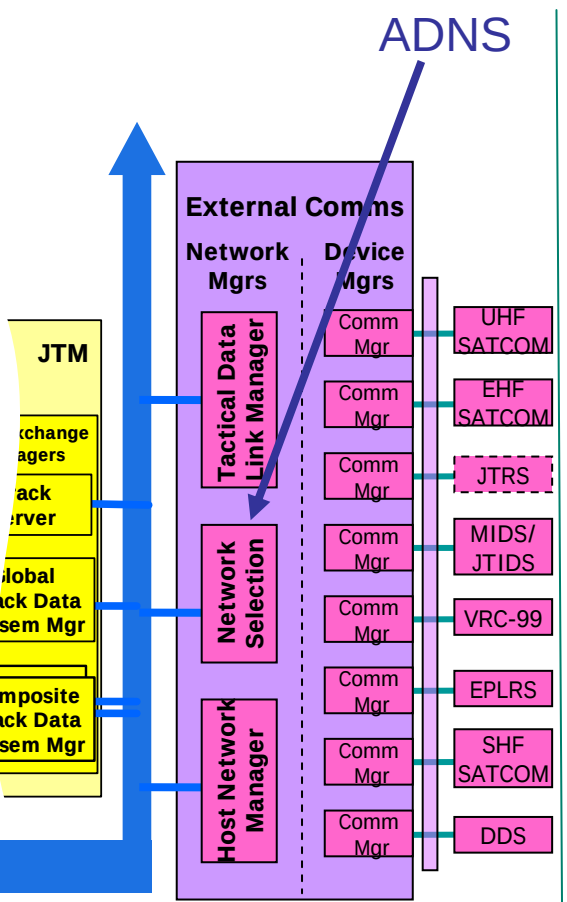


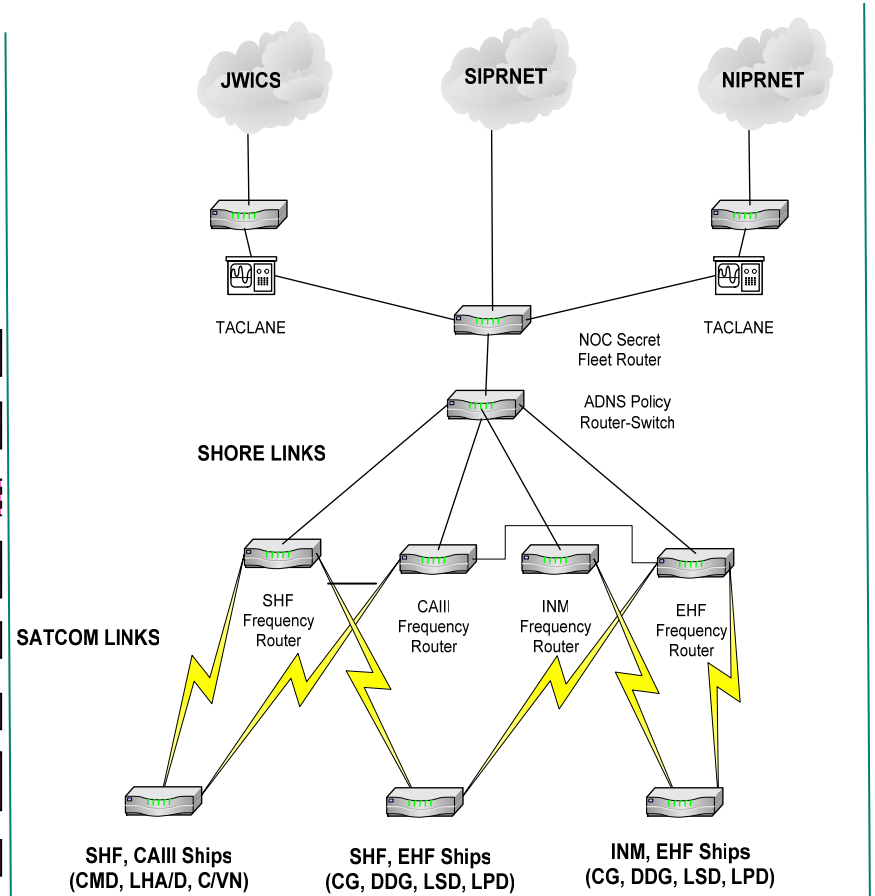
CLIP Functions

- Message Packing/Unpacking
- Gridlock Pad Applications
- Data Forwarding
- Position Extrapolation
- J-Series Message Transmit/Receive
- Track Quality/ R^2
- JICO Support System
- Net Participant Group Management
- Time Slot Allocation
- PPLI/IU

- Link-11 & 11B
- Link-22
- Link-4A
- JTRS
- Link-16
- JRE
- S-TADIL-J
- Variable Message Format

Automated Digital Network System (ADNS)

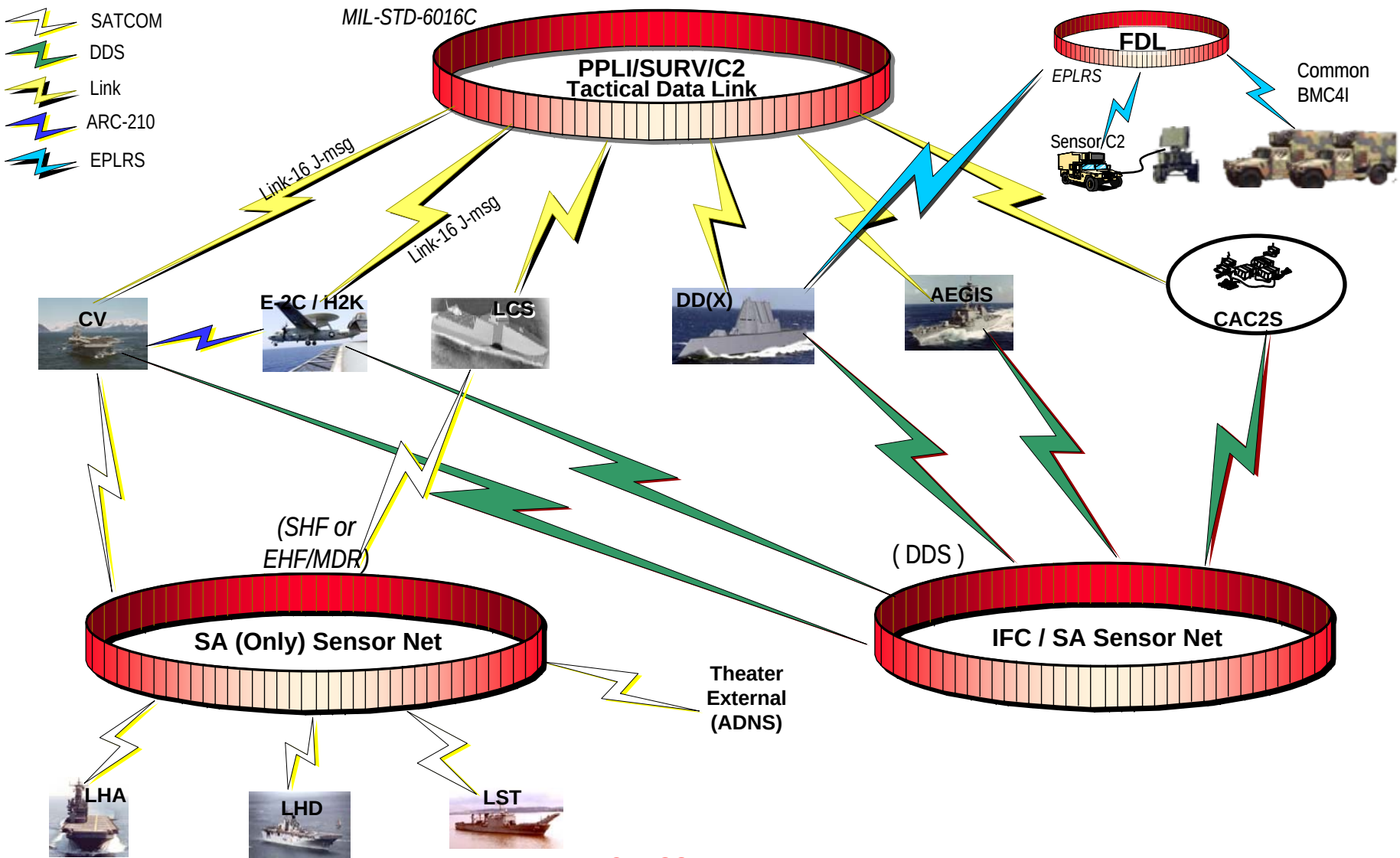




Priority	Application or Traffic Types
6	Reserved for Fires, etc.
5	Chat
4	GCCS-M NETPREC
4	Mission Critical E-mail/Web
3	Whiteboard, Web
2	Email
1	Bulk Data (FTP)
0	Default
-1	Scavenger (Oracle, CST, CaS, TBMCS)

Coordinate OATM/JTM data dissemination QoS/CoS requirements with ADNS Increment 3 standards

Navy OATM Interconnectivity Concept



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OATM Programmatics

- OATM is the Navy's Enterprise-wide solution for a common track management capability
  - Runs in an open architecture environment
  - Incorporates the approved joint track management capability
  - Tailorable to different platforms, sensors, and comms devices
- PEO IWS 6 is the organization responsible for its development and integration on Navy platforms
- The DD(X) contract is the vehicle for implementing the initial OATM and incorporating JTM functionality into it
- The System Integrator/Design Agent (SI/DA) contract supports integration of the OATM across the Navy OA Enterprise as well as life cycle management and future upgrades

OATM Designed to Fit Within Navy's Open Architecture

- OA Track Management will:
  - Incorporate approved Joint Track Management (JTM) functionality
  - Extend JTM functionality to include Navy-unique requirements and interfaces
  - Produce a Common Tactical Picture with tracks of all track categories
    - Air (including BMs and ABT), Space
    - Land, Maritime Surface, Subsurface
  - Integrate with GCCS/JC2 Common Operational Picture and DCGS-N ISR picture
  - Provide near-term (2009-2012) interoperability improvements
  - Accommodate different tracking solutions
- A common external communications architecture will:
  - Provide consistent Tactical Data Link processing
  - Provide shared communications capabilities, not dedicated to specific use
  - Be interoperable with today's comms and data exchange standards
  - Extend to support future comms and data exchange standards
  - Support multi-networking, heterogeneous communications paths
  - Implement GIG/FORCEnet and NR-KPP concepts

IABM / OATM Roadmap

CLOSE DEVELOPMENTAL COUPLING WITH DD(X)

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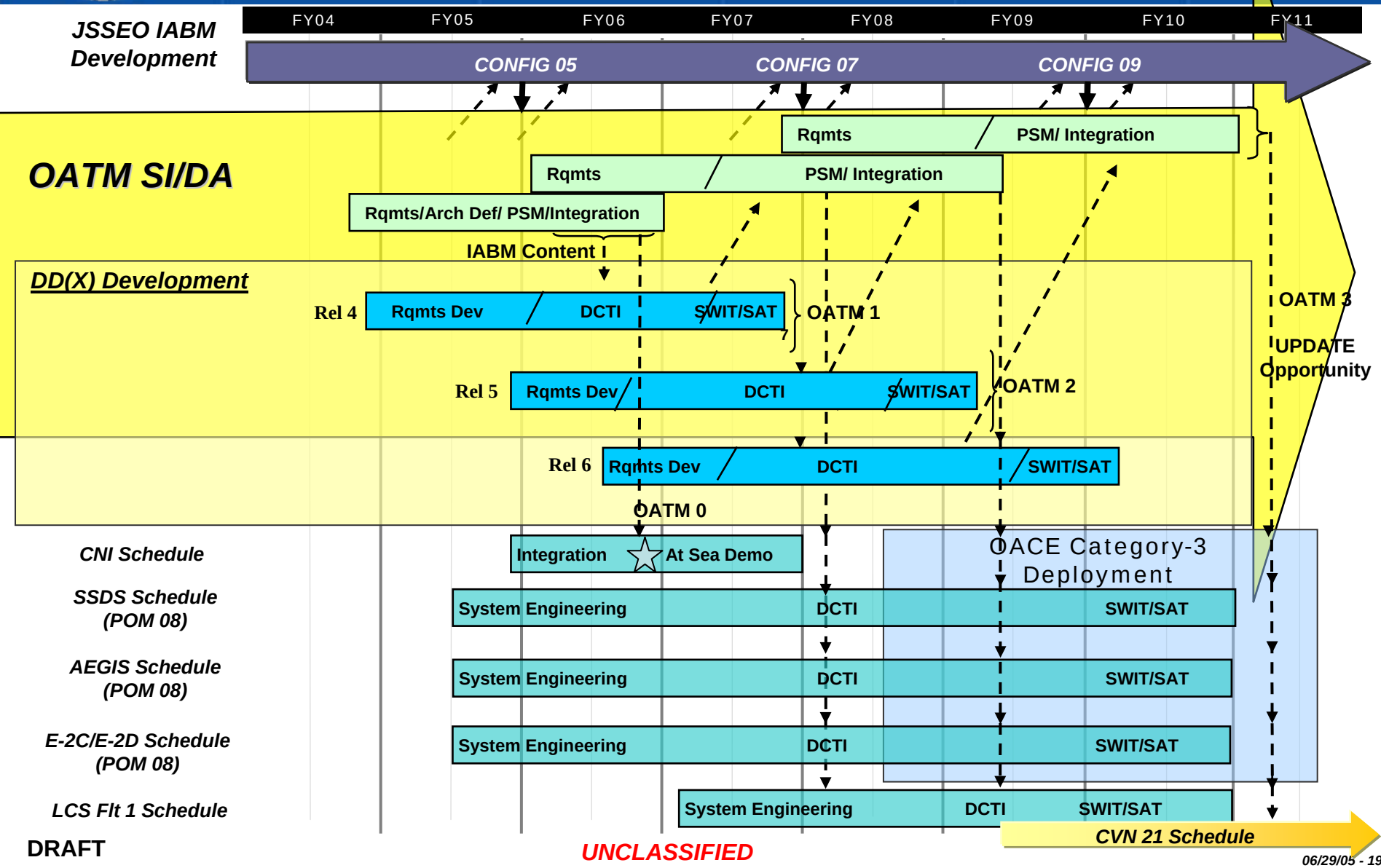

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Summary

- The OATM/JTM will provide:
  - Collaborative effort among CS/C2 & ISR communities to define a track management architecture and coordinated track management capability
  - Increased sharing of data exchange between the CTP and COP
  - Broadened data support
    - The types and content of shared data between the tactical & operational pictures
  - A bridge between the Enterprise Services of the CTP and COP

Questions?